AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) A computer based system for production schedule creation, comprising:

a production simulator means for simulating a production process expressing a production state and a production constraint of the production process ~~and is~~, being configured in a Petri net model or a graph model as a discrete system that moves a thing at each event;

a mathematical expression model holding means for holding a mathematical expression model output by said production simulator means, wherein said mathematical expression model is configured to correspond to said production simulator means and is created by said production simulator means in each case that an event requiring a production instruction occurs ~~which is created by acquiring information relating to creation of a production schedule to which attention is paid, and is a mathematical expression model by acquiring~~ using elements relating to creation of a production schedule from all or only part of the production state and the production constraint of the above described production process ~~configured in the above-described production simulator and expressing in a mathematical expression~~; and

an optimization calculation means for performing optimization calculation processing by using said mathematical expression model and a predetermined evaluation function for the above described mathematical expression model, and ~~calculates~~ calculating a production instruction for said production simulator means;

wherein the production instruction obtained by said optimization calculation means is supplied to said production simulator means to cause it to execute simulation, wherein simulation result is output as a production schedule,

wherein whenever a new event requiring a production instruction occurs, said production simulator means and said optimization calculation means are linked to each other so that creating said ~~an instruction to create a~~ mathematical expression model by said production simulator means ~~acquiring all or only part of said production state and the production constraint and expressing in a mathematical expression~~ and outputting an instruction to said optimization calculation means to perform optimization calculation from said production simulator means is ~~repeatedly output to said optimization calculation means from said production simulator means whenever a new event requiring an instruction occurs, and thereby said production simulator means and said optimization calculation means are linked to each other~~ repeated to create the production schedule in the above described production process.

2-29. (canceled).

30. (currently amended) A method for creating a production schedule by a production schedule creation device having

a production simulator that simulates a production process expressing a production state and a production constraint of the production process and is configured in a Petri net model or a graph model as a discrete system that moves a thing at each event,

a mathematical expression model holding device that holds a mathematical expression model output by said production simulator, wherein said mathematical expression model is configured to correspond to said production simulator and is created by said production simulator in each case that an event requiring a production instruction occurs ~~which is created by acquiring information relating to creation of a production schedule to which attention is paid, and is a mathematical expression model acquiring~~ using elements relating to creation of a production schedule from all or only part of the production state and the production constraint of the above described production process ~~configured in the above-described production simulator and expressing in a mathematical expression~~, and

an optimization calculation device that performs optimization calculation processing by using said mathematical expression model and a predetermined evaluation function for the above described mathematical expression model, and ~~calculates~~ calculating a production instruction for the above described production simulator,

wherein the production instruction obtained by the above described optimization calculation device is supplied to the above described production simulator to cause it to execute simulation, wherein simulation result is output as a production schedule,

wherein whenever a new event requiring a production instruction occurs, said production simulator and said optimization calculation device are linked to each other so that creating said ~~an instruction to create a~~ mathematical expression model by said production simulator ~~acquiring all or only part of said production state and the production constraint and expressing in a mathematical expression~~ and outputting an instruction to said optimization calculation device to perform optimization calculation from said production simulator is ~~repeatedly output to the above described optimization calculation device from the above described production simulator whenever a new event requiring an instruction occurs, and thereby the above described production simulator and the above described optimization calculation device are linked to each other~~ repeated to create the production schedule in the above described production process.

31-33. (canceled).

34. (currently amended) A computer-readable recording medium recording a computer program causing a computer to realize functions as a production schedule creation device comprising

a production simulator that simulates a production process expressing a production state and a production constraint of the production process and is configured in a Petri net model or a graph model as a discrete system that moves a thing at each event,

a mathematical expression model holding device that holds a mathematical expression model output by said production simulator, wherein said mathematical expression model is configured to correspond to said production simulator and is created by said production simulator in each case that an event requiring a production instruction occurs ~~which is created by acquiring information relating to creation of a production schedule to which attention is paid, and is a mathematical expression model acquiring~~ using elements relating to creation of a production schedule from all or only part of the production state and the production constraint of the above described production process ~~configured in the above-described production simulator and expressing in a mathematical expression~~, and

an optimization calculation device that performs optimization calculation processing by using said mathematical expression model and a predetermined evaluation function for the above described mathematical expression model, and ~~calculates~~ calculating a production instruction for the above described production simulator,

wherein the production instruction obtained by the above described optimization calculation device is supplied to the above described production simulator to cause it to execute simulation, wherein simulation result is output as a production schedule,

wherein whenever a new event requiring a production instruction occurs, said production simulator and said optimization calculation device are linked to each other so that creating said ~~an instruction to create a~~ mathematical expression model by said production simulator ~~acquiring all or only part of said production state and the production constraint and expressing in a mathematical expression~~ and outputting an instruction to said optimization calculation device to perform optimization calculation from said production simulator is ~~repeatedly output to the above described optimization calculation device from the above described production simulator whenever a new event requiring an instruction occurs, and thereby the above described production simulator and the above described optimization calculation device are linked to each other~~ repeated to create the production schedule in the above described production process.

35-46. (canceled).